# A scaled version of the double-mean-reverting model for VIX derivatives

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**ABSTRACT**

As the Heston model is not consistent with VIX data in real market well enough, alternative stochastic volatility models including the double-mean-reverting model of Gatheral have been developed to overcome its limitation. The double-mean-reverting model is a three factor model successfully reflecting the empirical dynamics of the variance but there is no closed form solution for VIX derivatives and SPX options and thus calibration using conventional techniques may be slow. In this paper, we propose a fast mean-reverting version of the double-mean-reverting model. We obtain a closed form approximation for VIX derivatives and show how it is effective by comparing it with the Heston model and the double-mean-reverting model.